

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 901 176 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
10.10.2001 Bulletin 2001/41

(51) Int Cl.7: H01L 51/20, H01L 27/00

(43) Date of publication A2:
10.03.1999 Bulletin 1999/10

(21) Application number: 98306888.3

(22) Date of filing: 27.08.1998

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: 29.08.1997 GB 9718393

(71) Applicant: Cambridge Display Technology
Limited
Cambridge, CB3 0DJ (GB)

(72) Inventors:
• Towns, Carl Robert
Stanstead, Essex CM24 8HB (GB)
• Heeks, Karl Stephen
Cottenham, Cambridge CB4 4JJ (GB)
• Carter, Julian Charles
Chesterton, Cambridge CB4 1 NZ (GB)

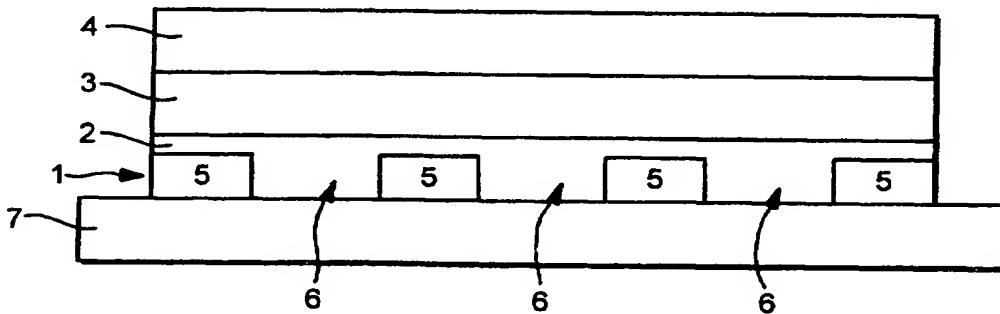
(74) Representative: Slingsby, Philip Roy et al
Page White & Farrer
54 Doughty Street
London WC1N 2LS (GB)

(54) Electroluminescent device

(57) An electroluminescent device comprising: a first charge-carrier injecting layer for injecting positive charge carriers and a second charge-carrier injecting layer for injecting negative charge carriers, at least one of the charge-carrier injecting layers being patterned so as to comprise spaced-apart charge-injecting regions; an organic light-emitting layer located between the first and second charge-carrier injecting layers; and an un-

patterned conductive polymer layer located between the organic light-emitting layer and the patterned charge-carrier injecting layer, the resistivity of the conductive polymer layer being sufficiently low to allow charge carriers to flow through it from the charge-injecting regions to generate light in the organic light-emitting layer but sufficiently high to resist lateral spreading of charge carriers beyond the charge-injecting regions.

FIG. 1



EP 0 901 176 A3



| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|--|--|--|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int.Cl.6) |
| X | WO 96 31909 A (UNIAX CORP) 10 October 1996 (1996-10-10) | 1-4, 9, 14-16 | H01L51/20 H01L27/00 |
| A | * page 24, line 15 - page 27, line 36 * | 6, 12, 13 | |
| A | WO 96 08047 A (PHILIPS ELECTRONICS NV) 14 March 1996 (1996-03-14) * the whole document * | 1 | |
| A | WO 95 24056 A (UNIAX CORP) 8 September 1995 (1995-09-08) * the whole document * | 1-4, 9, 14-16 | |
| P, X | WO 97 32452 A (UNIAX CORP) 4 September 1997 (1997-09-04) * the whole document * | 1-4, 9, 14-16 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.6) |
| | | | H01L |
| <p>The present search report has been drawn up for all claims</p> | | | |
| Place of search | Date of completion of the search | Examiner | |
| THE HAGUE | 23 August 2001 | van der Linden, J.E. | |
| CATEGORY OF CITED DOCUMENTS | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | |
| X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | | |

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 98 30 6888

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-08-2001

| Patent document cited in search report | | Publication date | | Patent family member(s) | Publication date |
|--|---|------------------|----------------|-------------------------------------|--|
| WO 9631909 | A | 10-10-1996 | AU US | 5386296 A 5804836 A | 23-10-1996 08-09-1998 |
| WO 9608047 | A | 14-03-1996 | EP US US | 0727100 A 5705888 A 5986400 A | 21-08-1996 06-01-1998 16-11-1999 |
| WO 9524056 | A | 08-09-1995 | US AU EP | 5723873 A 1936995 A 0754353 A | 03-03-1998 18-09-1995 22-01-1997 |
| WO 9732452 | A | 04-09-1997 | US AU EP | 5798170 A 2192197 A 1021934 A | 25-08-1998 16-09-1997 26-07-2000 |

EPO FORM D0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82